HISTORY AND BACKGROUND

THE WORLD Agroforestry Centre/International Centre for Research in Agroforestry (ICRAF) is an international and inter-governmental organisation established in 1978 to promote agroforestry research in developing countries. ICRAF was created in response to a visionary study led by John Bene of Canada’s International Development Research Centre (IDRC). The study coined the term “agroforestry” and called for recognition of the key role trees play on farms. During the 1980s ICRAF operated as an information council focused on Africa. It joined the Consultative Group on International Agricultural Research (CGIAR) in 1992 to conduct strategic research on agroforestry at a global scale, changing its name from Council to Centre.

ICRAF is now recognised as the international leader in agroforestry research and development. The expanded scale of operation has necessitated adopting the name World Agroforestry Centre, the organisation’s new brand name.

ICRAF’s global research and development themes are:
- Land and People.
- Environmental Services.
- Trees and Markets.
- Institutional Strengthening.

ICRAF-Southern Africa

ICRAF-SA is one of the five active regional programmes; the others are East and Central Africa, West Africa, Latin America and South East Asia. The Southern Africa Programme commenced activities in the region in 1985 and opened the regional office in 1987, in Malawi. In 1999 the regional office shifted to Harare, Zimbabwe, a more central location. ICRAF-SA has offices and fully-fledged national programmes in Malawi, Mozambique, Tanzania, Zambia and Zimbabwe. In other SADC countries the Programme works through universities and other partners.

The ICRAF-SA Programme is responding to the development challenges of Southern Africa (notably poverty, land degradation, low soil fertility and agricultural productivity, bad weather, HIV/AIDS etc). The response to these problems is through the Agroforestry for Sustainable Development in the Zambezi Basin Project, which covers all the five countries.
VISION

To have contributed to alleviation of poverty and attainment of food security in Southern Africa through agroforestry research and development that is based on environmentally sound management of natural resources.

At least 400,000 small-scale farmers in the region will have benefitted from agroforestry innovations by 2006 and 2 million by 2010.

MISSION

To conduct innovative research and development on agroforestry, strengthen the capacity of our partners, enhance worldwide recognition of the human and environmental benefits of agroforestry, and provide scientific leadership in the field of integrated natural resource management. We will do this by combining the best of science with farmer knowledge in a wide range of strategic alliances along the research–development continuum.

OBJECTIVES

- Develop and refine a diverse range of agroforestry options and accelerate their adoption.
- Build a network of partners and strengthen their capacity in agroforestry development.
- Through studies, contribute to value adding and improvement of the marketing of agroforestry products and services.
Agenda 1: Identifying natural resource problems, priorities and policies.

Under this research and development agenda, research and dialogue are carried out to identify policies that support continuous demand for agroforestry innovations and products.

Zimbabwean traditional and spiritual leaders at a recent policy meeting with ICRAF-SA.

The other aspect of this agenda is identification of problem domains and targeting of opportunities for agroforestry. This is achieved by employing geomatics technologies and associated expertise, which include: geographical information systems (GIS), remote sensing, GPS and spatial statistics. These tools are also utilized to support impact assessment.

A landsat ETM image of Southern Tanzania taken using GIS.
Agenda 2: Working towards ensuring that a sustainable supply of agroforestry germplasm is available in the region.

The initial strategy for seed supply is to contract production to farmers and research institutions. A follow on strategy called community AF seed banks (CAFO banks) is now under discussion. The strategy aims to bring together farmers, agro-input dealers and a financing facility. The goal is for farmers to produce their own germplasm and establish community nurseries.

An agroforestry nursery in Makoka, Malawi.

Agenda 3: Diversifying agroforestry options and increasing their availability.

A. Soil fertility improvement

Improved fallows

Several species and provenances have been screened and studies conducted on their biophysical limits, nutrient cycling, wood production, impact on soil physical properties, water

Sesbania with Tephrosia fallows. A good harvest following 2 years of sesbania IF in Zambia.
relations, pests and disease complex and economics. In addition, strategies for seed supply have been initiated. Improved fallows do well where landholdings are sizeable (at least 3 ha). They produce maize yields more than 3 times the unfertilized control (1 t/ha) and up to 15 t/ha of wood after two years.

Fuel wood from Sesbania.

**Relay cropping of maize with Sesbania sesban**
The species is planted 2 weeks after the maize germinates. The trees are left to grow after the maize is harvested and are cut down when they are 10 months old. When growing, Sesbania fixes nitrogen in the soil. When cut, the leaves and twigs are incorporated in the soil as green manure. This practice has been introduced in densely populated areas (such as Southern Malawi) where plot sizes preclude fallowing. The maize yield from this practice is about double that on unfertilized plots. It also produces 1.7 t/ha of fuelwood per year.

Sesbania growing with maize.

**Mixed cropping**
In this practice agroforestry tree species are intercropped with maize. Soil nutrients are added to the soil through nitrogen fixation and/or incorporation of prunings (green manure) to the soil.

4th maize crop (intercropped) with Gliricidia: No chemical fertiliser.
The practice has also been introduced in densely populated areas where land holdings preclude fallows. Mixed cropping with Gliricidia sepium has shown positive interaction with inorganic fertiliser: mixed cropping and a fraction of the recommended fertiliser rate can obtain yields at par with recommended rates of fertiliser.

**Biomass transfer**

This practice involves cultivation of tree species whose leaf biomass is used as mulch for high value crops planted at a separate location. Several species have been screened, including Gliricidia sepium and several Leucaenas and Sesbanias. These species produce 5-8 tonnes of leaf biomass per ha. The high quality mulches have enabled farmers to shift or expand from maize to vegetable growing and have increased rice yields in dambos/vleis.

**B. Fodder supply**

Several species and provenances for fodder trees have been screened and the performance of promising ones evaluated. Fodder species include: Acacia angustissima, Leucaenas (leucocephala, pallida, diversifolia etc) and Calliandra calothyrsus.

*Calliandra calothyrsus.*
Research and Development Foci

Feed rations of fodder trees and other supplements have been evaluated and their economic analysis is underway.

Green Acacia angustissina (above) and acacia and calliandra foliage processed and ready to feed ruminants in Zimbabwe (right).

C. Rotational woodlots

Several species have been screened, which includes the following Acacias: crassicarpa, leptocarpa, polycanitha and julifera. These have been tested on-farm and they have shown remarkable growth and wood production capacity. A. Crassicarpa produces 80-110 t/ha of wood in 5 years only.

Rotational maize and woodlot system in Tabora, Tanzania. The A.crassicarpa woodlot in the background is 5 years old.
Economic analysis of woodlots shows that their return to land is about 6 times that of continuous cropping with maize. The adoption of woodlots by tobacco farmers is estimated to save about 8,600 ha of Miombo woodland per year in Tabora district, Tanzania. The potential for adopting farmers selling carbon sequestration services is being explored.

D. Domestication of indigenous fruit trees (IFTs)

The work on domesticating IFTs started with ethnobotanical surveys to establish the uses of IFTs and the problems faced by farmers in domesticating them. This was followed by selection of preferred (priority) species and studies on their propagation, including development of methods for shortening their propagation time. Studies on policy, processing and marketing constraints have been carried out.
Agenda 4: Increasing adoption and farmer empowerment by encouraging their participation in the generation and dissemination of agroforestry.

This focus includes establishing and supporting existing agroforestry networks with skills and knowledge so that they can scale up agroforestry through improved dissemination. The networking and partnership activities include:

- Creating and sustaining networks for AF development in each country.
- Supporting training and education of students in AF at tertiary level.
- Training partners and collaborators (especially women and school children) in AF practices.
- Working with the media and developing effective communication and information pathways.

The 4-Prong scaling up strategy adopted by the Programme has resulted in a fairly rapid increase in the number of farmer AF adopters over the years.

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Progression of number of farmers testing and adopting AF in the region.

Agenda 5: Improving the marketing and processing of agroforestry products, especially indigenous tree (IFT) products.

ICRAF-SA is collaborating with several partners, including IDRC and CIAT, to synthesize indigenous processing methods. Women groups in Tabora (Tanzania) and Zomba (Malawi) and some farmers in Chipata (Zambia) are processing IFs into jams, juices and wines and then marketing them.
Processed IFs in Tanzania (above) and Uapaca fruits on the way to Mbare market in Harare, Zimbabwe (right), where many end up rotting due to low market and poor storage. ICRAF-SA is working with partners to promote processing and marketing of IFs and by-products.

**Agenda 6: Integrated regional programme and start-up programme in Mozambique.**

The management and coordination of the programme is done from Harare, Zimbabwe, with the support of a team of dedicated national team leaders, subject matter specialists and the Regional AF Steering Committee (RASC). The Mozambique programme has taken off, national and regional AF steering committees have been established and are fully functional and donor support has been sustained.

Regional Agroforestry Steering Committee (RASC) members, Malawi government officials and partners at the 2003 RASC meeting in Malawi. Networking and partnerships are key to ICRAF-SA success.
Agenda 6A: Gender and HIV/AIDS

All ICRAF-SA protocols and activities under the Programme are being reviewed to incorporate the gender and HIV/AIDS dimensions. ICRAF-SA is also undertaking studies to establish AF options and other interventions that are gender-sensitive and suitable for farm families affected by the HIV/AIDS pandemic (female-headed, child-headed, depleted labour supply etc).

Funding Partners

- Belgian Government (VWOB)
- Canadian International Development Agency (CIDA)
- Dutch Government
- European Union
- Farm Africa
- Germany Development Services (DED)
- Germany Federal Department for Economic Development (BMZ)
- Governments of Malawi, Mozambique, Tanzania, Zambia and Zimbabwe
- Rockefeller Foundation
- Swedish International Development Agency (SIDA)
- United States Agency for International Development (USAID)
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